AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated hereafter. [Use ~~strikethrough~~ for deleted matter and <u>underlined</u> for added matter.]

1. (previously presented) An optical disk comprising;

a recording layer having servo tracks; and

a clock reference structure formed along the servo tracks, the clock reference structure permitting data marks to be written and re-written to the recording layer in data fields of indeterminate length, the reference clock structure permitting the generation of a clock reference signal which controls where first and second transition edges of data marks are written to the recording layer with sub-bit accuracy.

2. (original) The optical disk as recited in claim 1, wherein the clock reference structure comprises a reference spatial frequency which is greater than a predetermined spatial frequency.

3. (original) The optical disk as recited in claim 2, wherein the predetermined spatial frequency is the maximum spatial frequency detectable by a standard DVD-ROM reader.

4. (original) The optical disk as recited in claim 2, wherein the clock reference structure comprises edges of grooves of the servo tracks which oscillate in-phase at an oscillation spatial frequency, the oscillation spatial frequency corresponding to the reference spatial frequency.

5. (original) The optical disk as recited in claim 2, wherein the clock reference structure comprises edges of grooves of the servo tracks which oscillate substantially 180 degrees out-of-phase at an oscillation spatial frequency, the oscillation spatial frequency corresponding to the reference spatial frequency.

6. (original) The optical disk as recited in claim 2, wherein the clock reference structure comprises pits formed along the servo tracks, the reciprocal of a distance between centers of adjacent pits corresponding to the reference spatial frequency.

7. (original) The optical disk as recited in claim 1, wherein a first optical transducer coupled to the clock reference structure generates a clock reference signal comprising a clock reference signal frequency.

8. (original) The optical disk as recited in claim 7, wherein the first optical transducer coupled to data marks on the recording layer generates a data signal having a frequency spectrum in which all fundamental frequency components of the frequency spectrum are less than the clock reference signal frequency.

9. (original) The optical disk as recited in claim 8, wherein a standard DVD-ROM reader can read the data marks but cannot detect the clock reference structure.

10. (previously presented) An optical disk recorder comprising:

an optical disk rotatably mounted on the recorder, the optical disk having a recording layer containing servo tracks;

a first optical transducer optically coupled to the recording layer of the optical disk, the first optical transducer following a servo track as the optical disk rotates;

a clock reference structure formed along the servo tracks providing data fields of indeterminate length, the clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

means for recording data marks on the recording layer of the optical disk, wherein the data marks are recorded to include fundamental spatial frequencies less than a predetermined spatial frequency; and

a write clock which determines the placement of first and second transition edges of data marks on the recording layer of the optical disk with sub-bit accuracy, the write clock being phase locked to the clock reference signal.

11. (original) The optical disk recorder as recited in claim 10, wherein the predetermined spatial frequency is the greatest spatial frequency detectable by a standard DVD-ROM reader.

12. (original) The optical disk recorder as recited in claim 10, wherein the servo tracks include grooves and the clock reference structure comprises edges of the grooves which oscillate in-phase.

13. (original) The optical disk recorder as recited in claim 12, wherein data marks cause the first optical transducer to produce an unwanted data signal as the optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using radial push-pull detection.

14. (original) The optical disk recorder recited in claim 10, wherein the servo tracks include grooves and the clock reference structure comprises edges on the grooves which oscillate substantially 180 degrees out-of-phase.

15. (original) The optical disk recorder recited in claim 14, wherein data marks cause the first optical transducer to produce and unwanted data signal as the optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using split detection.

16. (original) The optical disk recorder recited in claim 10, wherein the clock reference structure comprises pits formed along the servo tracks.

17. (original) The optical disk recorder as recited in claim 10, wherein the data marks are positioned along the servo tracks according to a DVD-ROM standard.

18. (original) The optical disk recorder as recited in claim 10, wherein the data marks are arbitrarily coded.

19. (original) The optical disk recorder as recited in claim 10, further comprising a second optical transducer which is optically coupled to the data marks on the recording layer, the second optical transducer following a servo track as the optical disk rotates, the data marks causing the second optical transducer to produce a data signal as the optical disk rotates.

20. (original) The optical disk recorder as recited in claim 19, wherein the first optical transducer comprises a first laser and a first objective lens and the second transducer comprises a second laser and a second objective lens.

21. (original) The optical disk recorder as recited in claim 20, wherein a numerical aperture of the combination objective lens is adjustably controlled to be lower when reading data than when recording data.

22. (original) The optical disk recorder as recited in claim 20, wherein a numerical aperture of the combination objective lens is adjustably controlled to be lower when reading data than when recording data.

23. (original) The optical disk recorder as recited in claim 20, wherein a wavelength of the second laser is greater than a wavelength of the first laser.

24. (previously presented) An optical disk recorder for receiving an optical disk which is rotatably mountable on the recorder, the optical disk comprising a recording layer having servo tracks and a clock reference structure having a spatial frequency which is greater than a predetermined spatial frequency, the clock reference structure being formed along the servo tracks and providing data fields of indeterminate length, the optical disk recorder comprising:

a first optical transducer which can optically couple to a recording layer of the optical disk, the first optical transducer following the servo tracks as the optical disk rotates, the clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

means for writing data marks on the recording layer of the optical disk; and

a write clock which determines the physical placement of first and second transition edges of data marks written on the recording layer of the optical disk with sub-bit accuracy, the write clock being phase locked to the clock reference signal.

25. (original) The optical disk recorder as recited in claim 24, wherein the predetermined spatial frequency is the maximum spatial frequency detectable by a standard DVD-ROM reader.

26. (original) The optical disk recorder as recited in claim 24, wherein the first optical transducer can detect higher spatial frequencies that an optical transducer of a standard DVD-ROM optical disk reader.

27. (original) The optical disk recorder as recited in claim 24, further comprising a second optical transducer which can optically couple to the data marks on the recording layer, the second optical transducer following a servo track as the optical disk rotates, the data marks causing the second optical transducer to produce a data signal as the optical disk rotates.

28. (original) The optical disk recorder as recited in claim 24, wherein the first optical transducer comprises a first laser and a first objective lens and the second transducer comprises a second laser and a second objective lens.

29. (original) The optical disk recorder as recited in claim 28, wherein a combination objective lens is both the first objective lens and the second objective lens and the objective lens.

30. (original) The optical disk recorder as recited in claim 29, wherein a numerical aperture of the combination objective lens is adjustably controlled to be lower when reading data than when recording data.

31. (original) The optical disk recorder as recited in claim 29, wherein a wavelength of the second laser is greater than a wavelength of the first laser.

32. (previously presented) The optical disk as recited in claim 7, wherein the first optical transducer coupled to data marks on the recording layer generates a data signal having a frequency spectrum in which the clock reference signal frequency is within fundamental frequency components of the frequency spectrum.

33. (previously presented) The optical disk as recited in claim 32, further including means for optically separating the data from the clock reference signal.

34. (previously presented) The optical disk as recited in claim 32, further including means for optically separating the clock reference signal the form the data signal.

35. (previously presented) An optical disk comprising:
a recording layer having servo tracks;

a clock reference structure formed along the servo tracks, the clock reference structure permitting data marks to be written and re-written to the recording layer in data fields of indeterminate length, the reference clock structure permitting the generation of a clock reference signal which controls where first and second transition edges of data marks are written to the recording layer with sub-bit accuracy;

a first optical transducer coupled to the clock reference structure generating the clock reference signal comprising a clock reference signal frequency; and wherein

the first optical transducer coupled to data marks on the recording layer generates a data signal having a frequency spectrum in which the clock reference signal frequency is within fundamental frequency components of the frequency spectrum.

36. (previously presented) An optical disk recorder comprising:

an optical disk rotatably mounted on the recorder, the optical disk having a recording layer containing servo tracks, the servo tracks comprising grooves;

a first optical transducer optically coupled to the recording layer of the optical disk, the first optical transducer following a servo as the optical disk rotates;

a clock reference structure comprising edges of the grooves which oscillate in-phase formed along the servo tracks, the clock reference structure providing data fields of indeterminate length, the clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

means for recording data marks on the recording layer of the optical disk, wherein the data marks are recorded to include fundamental spatial frequencies less than a predetermined spatial frequency;

a write clock which determines the placement of data marks on the recording layer of the optical disk, the write clock being phase locked to the clock reference signal; and

wherein data marks cause the first optical transducer to produce an unwanted data signal as the optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using radial push-pull detection.

37. (previously presented) An optical disk recorder comprising:

an optical disk rotatably mounted on the recorder, the optical disk having a recording layer containing servo tracks, the servo tracks comprising grooves;

a first optical transducer optically coupled to the recording layer of the optical disk, the first optical transducer following a servo track as the optical disk rotates;

a clock reference structure comprising edges on the grooves which oscillate substantially 180 degrees out-of-phase formed along the servo tracks, the clock reference structure providing data fields of indeterminate length, the clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

means for recording data marks on the recording layer of the optical disk, wherein the data marks are recorded to include fundamental spatial frequencies less than a predetermined spatial frequency;

a write clock which determines the placement of data marks on the recording layer of the optical disk, the write clock being phase locked to the clock reference signal; and

wherein data marks cause the first optical transducer to produce an unwanted data signal as the optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using split detection.

38. (previously presented) An optical disk, comprising:

a recording layer having a servo track; and

a clock reference structure formed along the servo track, the clock reference structure permitting writing of data having data fields of indeterminate length on the recording layer, the clock reference structure permitting generation of a clock reference signal used for writing of the data, the clock reference structure having a spatial frequency that is within the spatial frequency spectrum of the data.

39. (previously presented) The optical disk as recited in claim 38, wherein the data can be written on the recording layer in a substantially continuous data stream to permit substantially uninterrupted reading of the data from the recording layer by using the clock reference signal.

40. (previously presented) The optical disk as recited in claim 38, wherein the recording layer is without permanent sectoring fields situated between the data fields and the sectoring fields having synchronization information and track address information.

41. (previously presented) The optical disk as recited in claim 38, wherein the clock reference structure itself includes synchronization and track address information.

42. (previously presented) The optical disk as recited in claim 38, wherein the clock reference structure comprises edges of grooves of the servo track that oscillate in-phase.

43. (previously presented) The optical disk as recited in claim 38, wherein the clock reference structure comprises edges of grooves of the servo track that oscillate out of phase.

44. (previously presented) The optical disk as recited in claim 38, wherein the clock reference signal permits writing of the data on the recording layer with sub-bit accuracy relative to the clock reference signal.

45. (previously presented) The optical disk as recited in claim 38, wherein the recording layer and clock reference structure are implemented so that a standard DVD Read-only reader can read the data but cannot detect the clock reference structure.

46. (previously presented) The optical disk as recited in claim 38, wherein an optical transducer is coupled to the clock reference structure and generates the clock reference signal.

47. (previously presented) The optical disk as recited in claim 46, wherein the optical transducer is coupled to data marks on the recording layer and generates a data signal having fundamental frequency components that define a data frequency spectrum corresponding to the spatial frequency spectrum of the data on the recording layer.

48. (previously presented) An optical disk, comprising:

recording means having a servo track for permitting writing of data having data fields of indeterminate length; and

clock reference means associated with the servo track for permitting generation of a clock reference signal used for writing, the clock reference means having a spatial frequency that is within the spatial frequency spectrum of the data.

49. (previously presented) The optical disk as recited in claim 48, wherein the recording means permits data to be written on the recording layer in a substantially

continuous data stream to permit substantially uninterrupted reading of the data from the recording means by using the clock reference signal.

50. (currently amended) The optical disk as recited in claim 48, wherein the recording means permits data to be written on the recording layer in either a continuous or discontinuous data stream ~~by using the clock reference signal~~ ~~to permit uninterrupted reading of the data from the recording means~~.

51. (currently amended) The optical disk as recited in claim 48, wherein the recording means permits data to be written on the recording layer without permanent sectoring fields that are situated between the data fields ~~and that have~~ <u>, the sectoring fields having</u> information pertaining to synchronization and track address information.

52. (previously presented) The optical disk as recited in claim 48, wherein the clock reference means encodes synchronization and track address information.

53. (previously presented) The optical disk as recited in claim 48, wherein the clock reference means comprises edges of grooves of the servo track that oscillate in-phase.

54. (previously presented) The optical disk as recited in claim 48, wherein the clock reference means comprises edges of grooves of the servo track that oscillate out of phase.

55. (previously presented) The optical disk as recited in claim 48, wherein the clock reference signal permits writing of the data on the recording means with sub-bit accuracy relative to the clock reference signal.

56. (previously presented) The optical disk as recited in claim 48, wherein a standard DVD Read-only reader can read the data from the recording means but cannot detect the clock reference means.

57. (previously presented) An optical disk, comprising:

a recording layer having a servo track without permanent sectoring fields with information pertaining to synchronization information;

a clock reference structure formed along the servo track and comprising edges of grooves of the servo track which oscillate in-phase at an oscillation spatial frequency, the oscillation frequency corresponding to a clock reference spatial frequency, the clock reference structure permitting writing of data marks having data fields of indeterminate length on the recording layer, the reference clock structure permitting generation of a clock reference signal used for writing of the data, the clock reference structure having a spatial frequency that is within the spatial frequency spectrum of the data; and

wherein the recording layer permits writing of data in a substantially continuous data stream to permit substantially uninterrupted reading of the data from the recording layer by using the clock reference signal.

58. (previously presented) The optical disk as recited in claim 57, wherein the recording layer permits writing of data in either a continuous or discontinuous data stream to permit uninterrupted reading of the data from the recording layer.

59. (previously presented) The optical disk as recited in claim 57, wherein the clock reference structure itself includes synchronization and track address information.

60. (previously presented) The optical disk as recited in claim 57, wherein the clock reference signal permits writing of the data on the recording layer with sub-bit accuracy relative to the clock reference signal.

61. (previously presented) The optical disk as recited in claim 57, wherein the recording layer and clock reference structure are implemented so that a standard DVD Read-only reader can read the data but cannot detect the clock reference structure.

62. (previously presented) The optical disk as recited in claim 57, wherein an optical transducer is coupled to the clock reference structure and generates the clock reference signal.

63. (previously presented) The optical disk as recited in claim 62, wherein the optical transducer is coupled to data marks on the recording layer and generates a data signal having fundamental frequency components that define a data frequency spectrum corresponding to the spatial frequency spectrum of the data on the recording layer.

64. (previously presented) An optical disk recorder, comprising:

an optical disk rotatably mounted on the recorder, the optical disk having a recording layer containing a servo track;

a first optical transducer optically coupled to the recording layer of the optical disk, the first optical transducer following a servo track as the optical disk rotates;

a clock reference structure formed along the servo track providing data fields of indeterminate length, the clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

means for recording data on the recording layer of the optical disk, wherein the data is recorded to include fundamental spatial frequencies that define a spatial frequency spectrum;

a write clock being phase locked to the clock reference signal and used to determine the placement of data on the recording layer of the optical disk; and

wherein the clock reference structure has a spatial frequency that is within the spatial frequency spectrum of the data.

65. (previously presented) The optical disk recorder as recited in claim 64, wherein the data can be written on the recording layer by the recording means in a continuous data stream to permit uninterrupted reading of the data from the recording layer by using the clock reference signal.

66. (previously presented) The optical disk recorder as recited in claim 64, wherein the optical disk is without permanent sectoring fields situated between the data fields on the recording layer.

67. (previously presented) The optical disk recorder as recited in claim 64, wherein the clock reference structure itself includes synchronization and track address information and further comprising a means for decoding this information.

68. (previously presented) The optical disk recorder as recited in claim 64, wherein the servo track includes grooves and the clock reference structure comprises edges of the grooves which oscillate in-phase.

69. (previously presented) The optical disk recorder as recited in claim 64, wherein the data causes the first optical transducer to produce an unwanted data signal as the

optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using radial push-pull detection.

70. (previously presented) The optical disk recorder as recited in claim 64, wherein the servo track includes grooves and the clock reference structure comprises edges on the grooves which oscillate out-of-phase.

71. (previously presented) The optical disk recorder as recited in claim 64, wherein the data causes the first optical transducer to produce an unwanted data signal as the optical disk rotates, and the clock reference signal is separated from the unwanted data signal by detecting the clock reference signal using split detection.

72. (previously presented) The optical disk recorder recited in claim 64, wherein the clock reference structure comprises pits formed along the servo tracks.

73. (previously presented) The optical disk recorder as recited in claim 64, wherein the data includes data marks that are positioned along the servo track according to a DVD Read-only standard.

74. (previously presented) The optical disk recorder as recited in claim 64, wherein the data includes data marks that are arbitrarily coded.

75. (previously presented) The optical disk recorder as recited in claim 64, further comprising a second optical transducer which is optically coupled to the data on the recording layer, the second optical transducer following the servo track as the optical disk rotates, the data causing the second optical transducer to produce a data signal as the optical disk rotates.

76. (currently amended) The optical disk recorder as recited in claim [[76]] 75, wherein the first optical transducer comprises a first laser and a first objective lens and the second transducer comprises a second laser and a second objective lens.

77. (previously presented) The optical disk recorder as recited in claim 76, wherein a combination objective lens comprises both the first objective lens and the second

objective lens, wherein a numerical aperture of the combination objective lens is adjustably controlled to be lower when reading data than when recording data.

78. (previously presented) The optical disk recorder as recited in claim 76, wherein a wavelength of the second laser is greater than a wavelength of the first laser.

79. (previously presented) The optical disk recorder as recited in claim 64, wherein the recording means is capable of writing data on the recording layer with sub-bit accuracy.

80. (previously presented) The optical disk recorder as recited in claim 64, further including means for separating the data from the clock reference signal.

81. (previously presented) An optical disk recorder, comprising:

(a) means for receiving an optical disk having:

(1) recording means having a servo track for permitting writing of data having data fields of indeterminate length; and

(2) clock reference means associated with the servo track for permitting generation of a clock reference signal used for the storage of the data, the clock reference means having a spatial frequency that is within the spatial frequency spectrum of the data; and

(b) means for determining the clock reference signal based upon the clock reference means; and

(c) means for writing data upon the servo track based upon the clock reference signal so that the spatial frequency spectrum of the data overlaps the spatial frequency of the clock reference means.

82. (previously presented) The optical disk recorder as recited in claim 81, wherein the means for writing data writes the data on the recording means in a continuous data stream to permit uninterrupted reading of the data from the recording means by using the clock reference signal.

83. (previously presented) The optical disk recorder as recited in claim 81, wherein the recording means is without permanent sectoring fields that are situated between

the data fields and that have synchronization information and track address information.

84. (previously presented) The optical disk recorder as recited in claim 81, wherein the means for determining the clock reference signal can decode synchronization and track address information from the clock reference means.

85. (previously presented) The optical disk recorder as recited in claim 81, wherein the means for determining the clock reference signal can decode the clock reference means when defined as edges of grooves of the servo track that oscillate in-phase.

86. (previously presented) The optical disk recorder as recited in claim 81, wherein the means for determining the clock reference signal can decode the clock reference means when defined as edges of grooves of the servo track that oscillate out of phase.

87. (previously presented) The optical disk recorder as recited in claim 81, wherein the means for writing data can write data on the recording means with sub-bit accuracy relative to the clock reference signal.

88. (currently amended) A method, comprising the steps of:

~~providing~~ detecting a servo track on an optical disk, the servo track comprising ~~with~~ a recording layer ~~having a servo track, the servo track having~~ and a clock reference structure;

generating a clock reference signal from the clock reference structure; and

writing data having data fields of indeterminate length on the recording layer based upon the clock reference signal, the spatial frequency spectrum of the data overlapping the spatial frequency of the clock reference structure.

89. (previously presented) The method as recited in claim 88, wherein the data is written on the recording layer during the writing step in a continuous data stream to permit uninterrupted reading of the data from the recording layer by using the clock reference signal.

90. (previously presented) The method as recited in claim 88, further comprising the step of generating synchronization and track address information from the clock reference structure.

91. (previously presented) The method as recited in claim 88, wherein the clock reference structure comprises edges of grooves of the servo track that oscillate in-phase.

92. (previously presented) The method as recited in claim 88, wherein the clock reference structure comprises edges of grooves of the servo track that oscillate out of phase.

93. (previously presented) The method as recited in claim 88, wherein the step of writing data on the recording layer is performed with sub-bit accuracy relative to the clock reference signal.

94. (currently amended) The method as recited in claim [[84]] 88, further comprising the steps of:

~~coupling~~ detecting with an optical transducer the clock reference structure to generate the clock reference signal; and

~~coupling~~ detecting with the optical transducer data marks on the recording layer; and

generating a data signal having fundamental frequency components that define a data frequency spectrum corresponding to the spatial frequency spectrum of the data on the recording layer.

95. (previously presented) An optical disk, comprising:

a recording layer having a servo track; and

a clock reference structure formed along the servo track, the clock reference structure permitting writing of data having data fields of indeterminate length on the recording layer, the reference clock structure permitting generation of a clock reference signal which controls where first and second transition edges of data marks are recorded for the writing of the data with sub-bit accuracy.

96. (previously presented) An optical disk, comprising:

recording means having a servo track for permitting writing of data having data fields of indeterminate length; and

clock reference means associated with the servo track for permitting generation of a clock reference signal which controls where first and second transition edges of data marks are recorded for writing data with sub-bit accuracy.

97. (previously presented) An optical disk, comprising:

a recording layer having a servo track;

a clock reference structure formed along the servo track and comprising edges of grooves of the servo track which oscillate in-phase at an oscillation spatial frequency, the oscillation frequency corresponding to a clock reference spatial frequency, the clock reference structure permitting writing of data marks on the recording layer in data fields of indeterminate length, the clock reference structure permitting generation of a clock reference signal which controls where first and second transition edges of data marks are recorded for the writing of the data with sub-bit accuracy.

98. (previously presented) An optical disk recorder, comprising:

(a) means for receiving an optical disk having:

(1) recording means having a servo track for permitting writing of data having data fields of indeterminate length; and

(2) clock reference means associated with the servo track for permitting generation of a clock reference signal which controls where first and second transition edges of data marks are recorded for the writing of the data with sub-bit accuracy and which is used for the storage of the data; and

(b) means for determining the clock reference signal based upon the clock reference means; and

(c) means for writing data upon the servo track based upon the clock reference signal with sub-bit accuracy.

99. (currently amended) A method, comprising the steps of:

~~providing~~ <u>detecting a servo track on</u> an optical disk<u>, the servo track comprising</u> ~~with~~ a recording layer having a servo track~~, the servo track having~~ and a clock reference structure;

generating a clock reference signal from the clock reference structure and which controls where first and second transition edges of data marks are recorded for the writing of the data with sub-bit accuracy; and

writing data having data fields of indeterminate length on the recording layer based upon the clock reference signal with sub-bit accuracy.

100. (previously presented) The optical disk as recited in claim 38, the clock reference structure further permitting re-writing of data having data fields and the clock reference signal further used for re-writing of the data.

101. (previously presented) The optical disk as recited in claim 44, wherein the clock reference signal further permits re-writing of the data of the data on the recording layer with sub-bit accuracy relative to the clock reference signal.

102. (previously presented) The optical disk as recited in claim 48, the recording means further permitting re-writing of data and the clock reference signal further used for re-writing data.

103. (previously presented) The optical disk as recited in claim 55, wherein the clock reference signal further permits re-writing of the data on the recording means with sub-bit accuracy relative to the clock reference signal.

104. (currently amended) The optical disk as recited in claim 57, the clock reference structure further permitting re-writing of data marks having data fields of indeterminate length on the recording layer, the reference clock structure further permitting generation of a clock reference signal used for re-writing of the data, and wherein the recording layer further permits re-writing of data in a substantially continuous data stream without edit gaps to permit substantially uninterrupted reading of the data from the recording layer by using the clock reference signal

105. (previously presented) The optical disk as recited in claim 58, wherein the recording layer further permits re-writing of data in either a continuous or discontinuous data stream to permit uninterrupted reading of the data from the recording layer.

106. (currently amended) The optical disk as recited in claim 60, wherein the clock reference signal further permits re-writing of the data on the recording layer with sub-bit accuracy relative to the clock reference signal.[[.]]

107. (previously presented) The optical disk as recited in claim 95, the clock reference structure further permitting re-writing of data having data fields of indeterminate

length on the recording layer and the reference clock structure further permitting generation of a clock reference signal used for the re-writing of the data with sub-bit accuracy.

108. (previously presented) The optical disk as recited in claim 96, the servo track further permitting re-writing of data having data fields of indeterminate length and the clock reference signal further used for re-writing data with sub-bit accuracy.

109. (previously presented) The optical disk as recited in claim 97, the clock reference structure further permitting re-writing of data marks on the recording layer in data fields of indeterminate length and the clock reference signal further used for the re-writing of the data with sub-bit accuracy.

110. (new) An optical disk, comprising:

a recording layer having a servo track; and

a high spatial frequency clock reference structure formed along the servo track, the high spatial frequency clock reference structure enabling writing of data on the recording layer and enabling generation of a clock reference signal used for writing of the data.

111. (new) The optical disk of claim 110, wherein the high spatial frequency clock reference structure permits generation of a write clock signal having a frequency that is greater than a spatial frequency spectrum of a smallest data mark.

112. (new) The optical disk of claim 110, wherein the high spatial frequency clock reference structure permits generation of a write clock signal having a frequency that is equal to a spatial frequency spectrum of a smallest data mark.

113. (new) The optical disk of claim 110, wherein the writing of data on the recording layer is performed without an edit gap.

114. (new) The optical disk of claim 110, wherein the writing of data on the recording layer is performed as a re-writing of new data over existing data.

115. (new) The optical disk of claim 110, wherein the high spatial frequency clock reference structure formed along the servo track comprises a first edge and a second edge of a

groove of the servo track, wherein a frequency of oscillation of the first edge and the second edge corresponds to the clock reference structure.

116. (new) The optical disk of claim 115, wherein the first edge and the second edge oscillate in-phase with respect to each other.

117. (new) The optical disk of claim 115, wherein the first edge and the second edge oscillate out-of-phase with respect to each other.

118. (new) The optical disk of claim 110, wherein the high spatial frequency clock reference structure formed along the servo track comprises a plurality of pits, wherein a spatial frequency of the pits corresponds to the clock reference structure.

119. (new) A system, comprising:

an optical disk rotatably mounted on an optical disk recorder, the optical disk having a recording layer residing in at least one servo track;

a first optical transducer optically coupled to the recording layer of the optical disk, the first optical transducer following the servo track as the optical disk rotates;

a high spatial frequency clock reference structure formed along the servo track, the high spatial frequency clock reference structure causing the first optical transducer to produce a clock reference signal as the optical disk rotates;

a means for recording data on the recording layer of the optical disk; and

a write clock corresponding to the clock reference signal and used to determine placement of a first transition edge of a data mark and a second transition edge of the data mark.

120. (new) The system of claim 119, wherein the write clock is phase locked to the clock reference signal.

121. (new) The system of claim 119, further comprising at least one data field of indeterminate length written on the recording layer.

122. (new) The system of claim 121, wherein a new data mark is re-written onto the data field.

123. (new) The system of claim 121, wherein the data mark is written onto the data field without an edit gap.

124. (new) The system of claim 119, further comprising a plurality of data marks written without edit gaps.

125. (new) The system of claim 119, further comprising a plurality of data marks written without a synch field.

126. (new) The system of claim 119, further comprising a plurality of data marks written without an address field.

127. (new) The system of claim 119, further comprising a plurality of data marks written without a servo field.

128. (new) The system of claim 119, further comprising track address information within the clock reference structure.

129. (new) The system of claim 119, wherein the write clock functions at a frequency which is greater than the frequency of the clock reference signal.

130. (new) An optical disk, comprising:

a recording layer having a servo track; and

a high spatial frequency clock reference structure formed along the servo track enabling generation of a clock reference signal such that data is written onto the recording layer wherein edit gaps are omitted.

131. (new) The optical disk of claim 130, wherein the high spatial frequency clock reference structure formed along the servo track enables generation of the clock reference signal such that the data is written onto the recording layer wherein synchronization fields are omitted.

132. (new) The optical disk as recited in claim 130, wherein the clock reference signal controls where first and second transition edges of data marks are written to the recording layer with sub-bit accuracy.

133. (new) The optical disk as recited in claim 130, wherein the spatial frequency of the high spatial frequency clock reference structure is within the spatial frequency spectrum of the data.

134. (new) The optical disk as recited in claim 130, wherein the high spatial frequency clock reference structure comprises edges of grooves of the servo track which oscillate at an oscillation spatial frequency, the oscillation spatial frequency detectable thereby enabling generation of the clock reference signal.

135. (new) The optical disk as recited in claim 130, wherein the high spatial frequency clock reference structure comprises a plurality of pits residing in the servo track such that a spatial frequency corresponds to a distance between centers of the pits, the distance between centers of the pits detectable thereby enabling generation of the clock reference signal.

136. (new) The optical disk as recited in claim 130, the high spatial frequency clock reference structure further permitting re-writing of data marks having data fields of indeterminate length on the recording layer, the high spatial frequency clock reference structure further permitting generation of the clock reference signal used for re-writing of the data, and wherein the recording layer further permits re-writing of data marks in a substantially continuous data stream without edit gaps to permit substantially uninterrupted reading of the data marks from the recording layer.

137. (new) An optical disk recorder configured to receive an optical disk which is rotatably mountable on the recorder, the optical disk comprising a recording layer having a servo track and a high spatial frequency clock reference structure formed along the servo track enabling generation of a clock reference signal such that data is written onto the recording layer such that edit gaps are omitted, the optical disk recorder comprising:

a first optical transducer which can optically couple to the recording layer of the optical disk, the first optical transducer following the servo tracks as the optical disk rotates,

the clock reference structure causing the first optical transducer to produce the clock reference signal as the optical disk rotates;

means for writing data marks on the recording layer of the optical disk wherein edit gaps are omitted; and

a write clock which determines physical placement of first and second transition edges of data marks written on the recording layer of the optical disk by the means for writing data marks, the write clock being phase locked to the clock reference signal.

138. (new) The optical disk recorder as recited in claim 137, wherein the clock reference signal controls where the first and second transition edges of the data marks are written to the recording layer with sub-bit accuracy.

139. (new) The optical disk recorder as recited in claim 137, wherein a spatial frequency of the high spatial frequency clock reference structure is within a spatial frequency spectrum of the data marks.

140. (new) The optical disk recorder as recited in claim 137, further comprising a second optical transducer which can optically couple to the data marks on the recording layer, the second optical transducer following the servo track as the optical disk rotates, the data marks causing the second optical transducer to produce a data signal as the optical disk rotates.

141. (new) The optical disk recorder as recited in claim 137, wherein the means for writing data marks on the recording layer writes data marks on the recording layer as a re-writing of new data marks over existing data marks.

142. (new) A method comprising:

detecting a servo track on an optical disk, the servo track comprising a recording layer and a high spatial frequency clock reference structure formed thereon;

generating a clock reference signal from the high spatial frequency clock reference structure; and

writing data marks having data fields of indeterminate length on the recording layer based upon the generated clock reference signal, wherein edit gaps are omitted.

143. (new) The method of claim 142, wherein the detecting further comprises detecting oscillation of edges of grooves of the servo track which oscillate at an oscillation spatial frequency, the oscillation spatial frequency detectable thereby enabling generation of the clock reference signal.

144. (new) The method as recited in claim 142, wherein writing data marks on the recording layer further comprises writing data marks having first and second transition edges written with sub-bit accuracy.

145. (new) The method as recited in claim 142, wherein the spatial frequency of the high spatial frequency clock reference structure is within a spatial frequency spectrum of the data marks.

146. (new) The method as recited in claim 142, wherein writing data marks on the recording layer further comprises writing data marks on the recording layer as a re-writing of new data marks over existing data marks.

147. (new) An optical disk, comprising:
a servo track;

a recording layer residing in at least the servo track; and

a plurality of clock pits separated from each other by a spatial period, a reciprocal of the spatial period corresponding to a high spatial frequency clock reference structure enabling writing of data on the recording layer and enabling generation of a clock reference signal used for writing of the data.

148. (new) The optical disk of claim 147, wherein the plurality of clock pits are formed in the servo track.

149. (new) The optical disk of claim 147, wherein the high spatial frequency clock reference structure permits generation of a write clock signal having a frequency that is greater than a spatial frequency spectrum of a smallest data mark.

150. (new) The optical disk of claim 147, wherein the high spatial frequency clock reference structure permits generation of a write clock signal having a frequency that is equal to a spatial frequency spectrum of a smallest data mark.

151. (new) The optical disk of claim 147, wherein the writing of data on the recording layer is performed without an edit gap.

152. (new) The optical disk of claim 147, wherein the writing of data on the recording layer is performed as a re-writing of new data over existing data.

153. (new) An optical disk recorder configured to receive an optical disk which is rotatably mountable on the recorder, the optical disk comprising a recording layer having a servo track and a plurality of clock pits separated from each other by a spatial period, a reciprocal of the spatial period corresponding to a high spatial frequency clock reference structure enabling generation of a clock reference signal such that data is written onto the recording layer such that edit gaps are omitted, the optical disk recorder comprising:

a first optical transducer that can optically couple to the optical disk, the first optical transducer following the servo tracks as the optical disk rotates and detecting the plurality of clock pits such that the spatial frequency associated with the plurality of clock pits causes the first optical transducer to produce the clock reference signal as the optical disk rotates;

a laser that writes at least data marks on the recording layer of the optical disk wherein the edit gaps are omitted; and

a write clock that determines physical placement of first and second transition edges of data marks written on the recording layer of the optical disk by the laser, the write clock being phase locked to the clock reference signal.

154. (new) The optical disk recorder as recited in claim 153, wherein the clock reference signal controls where the first and second transition edges of the data marks are written to the recording layer with sub-bit accuracy.

155. (new) The optical disk recorder as recited in claim 153, wherein a spatial frequency of the high spatial frequency clock reference structure is within a spatial frequency spectrum of the data marks.

156. (new) The optical disk recorder as recited in claim 153, further comprising a second optical transducer which can optically couple to the data marks on the recording layer, the second optical transducer following the servo track as the optical disk rotates, the data marks causing the second optical transducer to produce a data signal as the optical disk rotates.

157. (new) The optical disk recorder as recited in claim 153, wherein the laser writes data marks on the recording layer as a re-writing of new data marks over existing data marks.

158. (new) A method comprising:

detecting a servo track on an optical disk, the servo track comprising a recording layer and a plurality of clock pits separated from each other by a spatial period, a reciprocal of the spatial period corresponding to a high spatial frequency clock reference structure;

generating a clock reference signal from the high spatial frequency clock reference structure; and

writing data marks having data fields of indeterminate length on the recording layer based upon the generated clock reference signal, wherein edit gaps are omitted.

159. (new) The method as recited in claim 158, wherein writing data marks on the recording layer further comprises writing data marks having first and second transition edges written with sub-bit accuracy.

160. (new) The method as recited in claim 158, wherein the spatial frequency of the high spatial frequency clock reference structure is within a spatial frequency spectrum of the data marks.

161. (new) The method as recited in claim 158, wherein writing data marks on the recording layer further comprises writing data marks on the recording layer as a re-writing of new data marks over existing data marks.

162. (new) A master disk comprising:

a disk;

at least one servo track formed thereon by etching away an exposed photoresist region, the exposed photoresist region formed by exposing a photoresist coating disposed on the surface of the glass disk using a focused laser beam; and

a high spatial frequency clock reference structure formed along the servo track, the high spatial frequency clock reference structure enabling writing of data on a recording layer on a writable disk manufactured using the master disk and enabling generation of a clock reference signal used for writing of the data, the high spatial frequency clock reference structure formed by modulating the focused laser beam at a high frequency corresponding to the high spatial frequency clock reference structure thereby exposing the photoresist coating such that the exposed photoresist region forms the high spatial frequency clock reference structure along the servo track.

163. (new) A method of manufacturing writable optical disks, comprising:

coating a glass disk with a photoresist;

exposing the photoresist using a focused laser beam, the exposing further comprising:

rotating the glass disk on a precision spindle such that at least one portion of the photoresist is exposed, the exposed portion corresponding to at least one servo track; and

modulating the focused laser beam at a high frequency to expose the portion of the photoresist coating such that at least one edge of the exposed portion corresponds to a high spatial frequency clock reference structure, and

developing the glass disk to remove the exposed portion of the photoresist coating and to harden an unexposed portion of the photoresist coating.

164. (new) The method of claim 163, further comprising deflecting the focused laser beam such that the focused laser beam oscillates in phase radially to form a first oscillating edge and a second oscillating edge on the exposed portion of the photoresist such that the oscillating edges oscillate in-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

165. (new) The method of claim 163, further comprising modulating power of the focused laser beam such that the focused laser beam forms a first oscillating edge and a second oscillating edge on the exposed portion of the photoresist such that the oscillating

edges oscillate 180 degrees out-of-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

166. (new) The method of claim 163, further comprising causing the focused laser beam to form one edge on the exposed portion of the photoresist such that the edge oscillates, the oscillating edge forming the high spatial frequency clock reference structure.

167. (new) The method of claim 163, further comprising:

plating the glass disk with a metal such that a groove corresponding to the removed exposed photoresist is filled;

separating the metal from the glass disk; and

mounting the metal onto a backing plate to form a surface of a mold.

168. (new) The method of claim 164, further comprising:

molding a plastic with the mold surface; and

coating the plastic with the recording layer,

such that the writable optical disk is formed from the plastic and the recording layer.

169. (new) A method of manufacturing writable optical disks, comprising:

molding a plastic with a mold surface having a high spatial frequency clock reference structure thereon which enables generation of a clock reference signal used for writing of data on a recording layer of the writable optical disk; and

coating the plastic with the recording layer,

such that the writable optical disk is formed from the plastic and the recording layer.

170. (new) A system for manufacturing writable optical disks, comprising:

means for exposing a portion of a photoresist coating on a glass disk using a focused laser beam when the glass disk is rotated, the exposed portion corresponding to at least one servo track;

means for modulating the focused laser beam at a high frequency to expose the portion of the photoresist coating such that at least one oscillating edge of the exposed portion corresponds to a high spatial frequency clock reference structure;

means for developing the glass disk to remove the exposed portion of the photoresist coating and to harden an unexposed portion of the photoresist coating;

means for plating the glass disk with a metal such that a groove corresponding to the removed exposed photoresist coating is filled with the metal;

means for separating the metal from the glass disk;

means for mounting the metal onto a backing plate to form a surface of a mold;

means for molding a plastic with the mold surface; and

means for coating the plastic with a recording layer,

such that the writable optical disk formed from the plastic and the recording layer, and such that the high spatial frequency clock reference structure enables generation of a clock reference signal used for writing of data on the recording layer.

171. The system of claim 170, further comprising means for deflecting the focused laser beam such that the focused laser beam oscillates in phase radially to form a first oscillating edge and a second oscillating edge on the exposed portion of the photoresist coating such that the oscillating edges oscillate in-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

172. (new) The system of claim 170, further comprising means for modulating power of the focused laser beam such that the focused laser beam forms a first oscillating edge and a second oscillating edge on the exposed portion of the photoresist coating such that the oscillating edges oscillate 180 degrees out-of-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

173. (new) The system of claim 170, further comprising means for modulating the focused laser beam to form one edge on the exposed portion of the photoresist coating such that the edge oscillates, the oscillating edge forming the high spatial frequency clock reference structure.

174. (new) An optical transducer configured to optically couple to a recording layer of a writable optical disk having at least one servo track, the optical transducer following the servo track as the writable optical disk rotates, the servo track having a high spatial frequency clock reference structure thereon, comprising:

a laser diode that emits a light beam;

an objective lens that receives and focuses the light beam onto the recording layer of the writable optical disk, and that receives a modulated light beam reflected from the writable

optical disk, the modulated light beam being modulated by the high spatial frequency clock reference structure; and

a detector that detects the modulated light beam and that generates a clock reference signal used for writing of data from the modulation of the modulated light beam.

175. (new) The optical transducer of claim 174, wherein the reflected portion of the modulated light beam is modulated by a first oscillating edge and a second oscillating edge of the servo track, and wherein the first oscillating edge and the second oscillating edge correspond to the high spatial frequency clock reference structure.

176. (new) The optical transducer of claim 175, wherein the first oscillating edge and the second oscillating edge oscillate in-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

177. (new) The optical transducer of claim 175, wherein the first oscillating edge and the second oscillating edge oscillate 180 degrees out-of-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

178. (new) The optical transducer of claim 174, wherein the reflected portion of the modulated light beam is modulated by one edge of the servo track, the oscillating edge forming the high spatial frequency clock reference structure.

179. (new) The optical transducer of claim 174, wherein the reflected portion of the modulated light beam is modulated by a plurality of clock pits separated from each other by a spatial period, a reciprocal of the spatial period corresponding to the high spatial frequency clock reference structure.

180. (new) The optical transducer of claim 174, further comprising a polarization beam splitter that passes the light beam to the writable optical disk and reflects the modulated light beam to the detector.

181. (new) The optical transducer of claim 180, further comprising a quarter wave retardation plate that rotates the light beam relative to its initial orientation and further rotates

the modulated light beam such that the modulated light beam is rotated by ninety degrees so that the polarization beam splitter reflects the modulated light beam towards the detector.

182. (new) The optical transducer of claim 180, further comprising:

a second beam splitter that splits the modulated light beam received from the polarization beam splitter so that a first portion is directed towards the detector and a second portion is directed towards a second detector; and

the second detector that detects the second portion of the modulated light beam and that generates a focus-error signal used for writing of the data,

wherein the detector further generates a tracking-error signal used for writing of the data.

183. (new) The optical transducer of claim 174, wherein the laser diode emits a linearly polarized light beam.

184. (new) The optical transducer of claim 174, further comprising a collimator lens that collimates the light beam received from the laser diode.

185. (new) The optical transducer of claim 174, wherein the objective lens has a numerical aperture (NA) and the light beam has a wavelength (λ), such that a cutoff frequency of the optical transducer is defined $2*NA/\lambda$, and wherein the value of the cutoff frequency is greater than 1.85 cycles/μm, and wherein the value of the high spatial frequency clock reference structure is greater than 1.85 cycles/μm .

186. (new) The optical transducer of claim 174, further comprising a harmonic phase-lock loop that synchronizes the clock reference signal with a write clock signal.

187. (new) The optical transducer of claim 186, further comprising a frequency divider such that the harmonic phase-lock loop generates the write clock signal having a frequency equal to N times a modulation frequency of the modulated light beam.

188. (new) The optical transducer of claim 186, wherein the write clock signal controls when the optical transducer writes at least a first transition edge and a second transition edge of a data mark.

189. (new) The optical transducer of claim 174, wherein the modulation of the modulated light beam permits generation of a write clock signal having a frequency that is greater than a spatial frequency spectrum of a smallest data mark.

190. (new) The optical transducer of claim 174, wherein the clock reference signal permits generation of a write clock signal having a frequency that is equal to a spatial frequency spectrum of a smallest data mark.

191. (new) The optical transducer of claim 174, wherein the writing of data on the recording layer is performed without an edit gap.

192. (new) The optical transducer of claim 174, wherein the writing of data on the recording layer is performed as a re-writing of new data over existing data.

193. (new) The optical transducer of claim 174, wherein the detector further comprises:

a first quadrant that produces a first electrical signal (A) that is proportional to optical power incident on the first quadrant from a first portion of the modulated light beam;

a second quadrant that produces a second electrical signal (B) that is proportional to the optical power incident on the second quadrant from a second portion of the modulated light beam;

a third quadrant that produces a third electrical signal (C) that is proportional to the optical power incident on the third quadrant from a third portion of the modulated light beam; and

a fourth quadrant that produces a fourth electrical signal (D) that is proportional to the optical power incident on the fourth quadrant from a fourth portion of the modulated light beam,

wherein noise generated by detected existing data marks is rejected by generating a split detection signal from the A, B, C and D electrical signals.

194. (new) The optical transducer of claim 193, wherein the split detection signal is generated according to the formula ((A + D) - (B + C)).

195. (new) The optical transducer of claim 193, wherein the split detection signal is normalized by dividing by the sum of the A, B, C and D electrical signals.

196. (new) The optical transducer of claim 193, further comprising electronic control circuitry that modulates optical power of an electrical current driving the laser diode, thereby writing data marks on a recording layer of the writable optical disk.

197. (new) A system configured to optically couple to a recording layer of a writable optical disk that reads existing data and that writes new data to the recording layer of the writable optical disk, the writing using a clock reference signal derived from a high spatial frequency clock reference structure residing on the writable optical disk, the system comprising:

an objective lens that receives and focuses light onto the writable optical disk, and that receives a returning portion of the light reflected from the writable optical disk that is modulated by the high spatial frequency clock reference structure and that is modulated by data marks recorded on the writable optical disk;

a write optical transducer, the write optical transducer comprising:

a first laser diode that emits a first light beam incident on the writable optical disk;

a first beam splitter that passes the first light beam to the writable optical disk and reflects the returning modulated light beam to a first detector; and

the first detector that detects the returning modulated portion of the light beam such that the first detector generates the clock reference signal used for writing the new data from the modulation of the returning portion of the modulated light beam, and

a read optical transducer, the read optical transducer comprising:

a second laser diode that emits a second light beam incident on the writable optical disk;

a second beam splitter that passes the second light beam to the writable optical disk and reflects the returning modulated light beam to a second detector; and

the second detector that detects the returning modulated portion of the light beam such that the second detector generates a data signal corresponding to the existing data on the writable optical disk.

198. (new) The system of claim 197, further comprising a second objective lens that receives and focuses the second light beam onto the writable optical disk, and that receives a returning portion of the second light beam reflected from the writable optical disk, and wherein the objective lens receives and focuses the first light beam onto the writable optical disk.

199. (new) The system of claim 197, wherein the returning modulated light beam associated with the first laser diode is modulated by a first oscillating edge and a second oscillating edge of a servo track, and wherein the first oscillating edge and the second oscillating edge correspond to the high spatial frequency clock reference structure.

200. (new) The system of claim 199, wherein the first oscillating edge and the second oscillating edge oscillate in-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

201. (new) The system of claim 199, wherein the first oscillating edge and the second oscillating edge oscillate 180 degrees out-of-phase with each other, the oscillating edges forming the high spatial frequency clock reference structure.

202. (new) The system of claim 197, wherein the returning modulated light beam associated with the first laser diode is modulated by one edge of a servo track, the oscillating edge forming the high spatial frequency clock reference structure.

203. (new) The system of claim 197, wherein the returning modulated light beam associated with the first laser diode is modulated by a plurality of clock pits separated from each other by a spatial period, a reciprocal of the spatial period corresponding to the high spatial frequency clock reference structure.

204. (new) The system of claim 197, wherein the objective lens has a numerical aperture (NA) whereby a cutoff frequency defined 2*NA/λ , wherein the first light beam emitted by the first laser diode has a first wavelength (first λ) such that the value of the cutoff frequency associated with the first light beam is greater than 1.85 cycles/μm, wherein the second light beam emitted by the second laser diode has a second wavelength (second λ) such that the value of the cutoff frequency associated with the first light beam is less than 1.85 cycles/μm, and wherein the value of the high spatial frequency clock reference structure is greater than 1.85 cycles/μm.

205. (new) A method for using a writable optical disk, comprising:

emitting a first light beam onto the writable optical disk, wherein the first light beam has a first wavelength (first λ);

receiving a reflected modulated first light beam reflected from a portion of the first light beam incident on the writable optical disk, wherein the modulated first light beam is modulated by a high spatial frequency clock reference structure of a servo track on the writable optical disk, the reflected modulated first light beam received through an objective lens having a numerical aperture (NA), whereby a cutoff frequency defined 2*NA/λ ;

detecting a returning modulated first light beam, such that the value of the cutoff frequency is greater than 1.85 cycles/μm;

generating a clock reference signal from a modulation frequency of the modulated first light beam;

generating a write clock signal;

synchronizing the clock reference signal with the write clock signal; and

writing data to a recording layer of the writable optical disk wherein the write clock signal controls a first transition edge and a second transition edge of a written data mark.

206. (new) The method of claim 205, further comprising:

emitting a second light beam onto the writable optical disk, wherein the second light beam has a second wavelength (second λ);

receiving a reflected modulated second light beam reflected from a portion of the second light beam incident on the writable optical disk, wherein the modulated second light beam is modulated by the data on the writable optical disk, the reflected modulated second light beam received through the objective lens;

detecting a returning modulated second light beam, such that the value of the cutoff frequency is less than 1.85 cycles/μm; and

detecting the data of the modulated second light beam.

207. (new) The method of claim 205, wherein the modulation of the modulated first light beam permits generation of the write clock signal having a frequency that is greater than a spatial frequency spectrum of a smallest data mark.

208. (new) The method of claim 205, further comprising generating of the write clock signal having a frequency that is equal to a spatial frequency spectrum of a smallest data mark.

209. (new) The method of claim 205, further comprising writing the data on the recording layer is performed without an edit gap.

210. (new) The method of claim 205, further comprising writing data on the recording layer is performed as a re-writing of new data over existing data.